

CLAIMS

What is claimed:

5

1. A protein, peptide, or peptide mimetic that inhibits human telomerase, which has a sequence consisting of at least 500 consecutive amino acids encoded by DNA that hybridizes to a sequence complementary to SEQ. ID NO:1 at 5°C to 25°C below  $T_m$  in aqueous solution at 1 M NaCl,  
wherein  $T_m$  is the melting temperature of double-stranded DNA having the sequence of SEQ. ID NO:1 under the same reaction conditions;  
except that said protein, peptide, or peptide mimetic contains one or more deletions, each of which consists essentially of:
  - a) residues 560-565,
  - b) residues 930-934,
  - c) at least 10 consecutive amino acids from residues 323-450,
  - d) at least 10 consecutive amino acids from residues 637-660,
  - e) at least 10 consecutive amino acids from residues 748-766,
  - f) at least 10 consecutive amino acids from residues 1055-1071, or
  - g) at least 10 consecutive amino acids from residues 1084-1116of SEQ. ID NO:2.
2. A protein, peptide, or peptide mimetic that inhibits human telomerase, which has a sequence consisting of at least 500 consecutive amino acids of SEQ. ID NO:2; except that it contains one or more deletions, each of which consists essentially of:
  - a) residues 560-565,
  - b) residues 930-934, or
  - c) at least 10 consecutive amino acids from residues 323-450,
  - d) at least 10 consecutive amino acids from residues 637-660,
  - e) at least 10 consecutive amino acids from residues 748-766,
  - f) at least 10 consecutive amino acids from residues 1055-1071, or
  - g) at least 10 consecutive amino acids from residues 1084-1116of SEQ. ID NO:2.
3. The protein, peptide, or peptide mimetic of claim 1, which contains one or more deletions consisting essentially of residues 560-565, 930-934, 323-450, 637-660, 748-766, 1055-1071, or 1084-1116 of SEQ. ID NO:2.
4. The protein, peptide, or peptide mimetic of claim 2, which consists essentially of full-length human telomerase amino acid sequence, except for said deletion(s).
5. f A protein or peptide according to claim 2, which is a dominant negative mutant.

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Substitute Specification

6. The protein, peptide, or peptide mimetic of claim 2, which binds human telomerase RNA component but lacks processive telomerase activity.
7. The protein, peptide, or peptide mimetic of claim 2, which binds human telomeres but lacks processive telomerase activity.
9. A peptide mimetic according to claim 13, wherein one or more linkages between consecutive amino acids in the mimetic is  $-\text{CH}_2\text{NH}-$ ,  $-\text{CH}_2\text{S}-$ ,  $-\text{CH}_2\text{CH}_2-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}(=\text{O})\text{CH}_2-$ ,  $-\text{CH}(\text{OH})\text{CH}_2-$ , or  $-\text{CH}_2\text{SO}-$ .
10. A method of inhibiting telomerase catalytic activity, comprising introducing a protein, peptide, or peptide mimetic according to claim 1 into an environment containing telomerase reverse transcriptase.
11. A method of inhibiting telomerase catalytic activity, comprising introducing a protein, peptide, or peptide mimetic according to claim 13 into an environment containing telomerase reverse transcriptase and telomerase RNA component.
12. A method of inhibiting telomerase catalytic activity in a cell, comprising expressing in the cell a nucleic acid encoding a protein or peptide according to claim 2.
13. A protein, peptide, or peptide mimetic that has a means for inhibiting telomerase activity.
14. The protein, peptide, or peptide mimetic of claim 13, which has a means for binding telomerase RNA component, but which lacks telomerase catalytic activity.
15. The protein, peptide, or peptide mimetic of claim 13, which lacks a means for binding telomerase RNA component.

16. The protein, peptide, or peptide mimetic of claim 14, wherein the telomerase inhibition means consists of at least 500 consecutive amino acids encoded by DNA that hybridizes to a sequence complementary to SEQ. ID NO:1 at 5°C to 25°C below  $T_m$  in aqueous solution at 1 M NaCl, wherein  $T_m$  is the melting temperature of double-stranded DNA having the sequence of SEQ. ID NO:1 under the same reaction conditions; except that said protein, peptide, or peptide mimetic contains one or more deletions, each of which consists essentially of:
- a) residues 560-565,
  - b) residues 930-934,
  - c) at least 10 consecutive amino acids from residues 323-450,
  - d) at least 10 consecutive amino acids from residues 637-660,
  - e) at least 10 consecutive amino acids from residues 748-766,
  - f) at least 10 consecutive amino acids from residues 1055-1071, or
  - g) at least 10 consecutive amino acids from residues 1084-1116
- of SEQ. ID NO:2.
17. The protein, peptide, or peptide mimetic of claim 16, wherein the telomerase inhibition means contains one or more deletions consisting essentially of residues 560-565, 930-934, 323-450, 637-660, 748-766, 1055-1071, or 1084-1116 of SEQ. ID NO:2.
18. The protein, peptide, or peptide mimetic of claim 15, wherein the telomerase inhibition means has a sequence consisting essentially of FFYVTE (SEQ. ID NO:3).
19. The protein, peptide, or peptide mimetic of claim 15, wherein the telomerase inhibition means has a sequence consisting essentially of FYVT (SEQ. ID NO:5).
20. The protein, peptide, or peptide mimetic of claim 15, wherein the telomerase inhibition means has a sequence consisting essentially of at least 10 consecutive amino acids in YGVLLKTHCPLRAA (SEQ. ID NO:4).
21. A method of inhibiting telomerase catalytic activity in a cell, comprising expressing in the cell a nucleic acid encoding a protein or peptide according to claim 13.

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